Open-File Report 374
Plate 1
This open-file release is a progress report that provides to the public the results of the first year of mapping on a three-year project. The map is incomplete and inconsistencies, errors, and omissions have not been resolved. This map may not conform to UGS policy and editorial standards and it may be premature for an individual or group to take action based on the cont nts.

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Progress Report Geologic Map of the Dutch John Quadrangle (east part) Utah-Colorado-Wyoming Year 1 of 3

Compiled by Douglas A. Sprinkel
2000

Utah Geological Survey
a division of
Utah Department of Natural Resources
in cooperation with
U.S. Geological Survey
STATEMAP Agreement No 99HQAG0138

30 X 60 MINUTE SERIES (TOPOGRAPHIC)

SCALE 1:100 000
1 CENTIMETER ON THE MAP REPRESENTS 1 KILOMETER ON THE GROUND
CONTOUR INTERVAL 50 METERS

DUTCH JOHN, UTAH–COLO.–WYO.
N4030–W10900/30 X 60

1981

Utah Geological Survey
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Progress Report Geologic Map of the Dutch John 30' x 60' Quadrangle (east part), Utah-Colorado-Wyoming

Year 1 of 3

Compiled by Douglas A. Sprinkel
2000

Open-File Report 374
Plate 2

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Description of Map Units

Qal Flood-plain alluvium (Holocene) - Unconsolidated silt, sand, and gravel in mostly the Green River flood plain; 1-30 m thick.

Qac Stream alluvium and colluvium (Holocene) - Unconsolidated silt, sand, and gravel in tributary stream channels of the Green River; 5-9 m thick.

Qaf_1 Younger alluvial-fan deposits (Holocene) - Unconsolidated, poorly sorted boulder, gravel, sand, and silt; less than 30 m thick.

Qe Eolian deposits (Holocene) - Unconsolidated, well-sorted, fine-grained, windblown sand and silt; less than 10 m thick.

Qc Colluvium (Holocene) - Heterogeneous mixture of boulders, gravel, cobbles, sand and silt that may grade into talus, landslide, and alluvial deposits mapped along the south flank of the Uinta Mountains; a few tens of meters thick.

Qmt Talus and colluvial deposits (Holocene and Pleistocene) - Unconsolidated and unstratified angular rock fragments that accumulate at the base of cliffs. Colluvium may be a significant part of this deposit along the south flank of the Uinta Mountains; less than 5 m thick.

Qms Slides, slumps and flows (Holocene and Pleistocene) - Earthflow and rotation slumps and slides in formations prone to slope failure.

Qat Terrace deposits (Holocene and Pleistocene) - Remnants of alluvial terraces along the Green River and its tributaries in the Jones Hole area; unconsolidated to locally cemented silt, sand, gravel, cobbles, and boulders; less than a few tens of meters thick.

Qaf_2 Older alluvial-fan deposits (Pleistocene) - Dissected, unconsolidated, poorly sorted boulder, gravel, sand, and silt; less than 10 m thick. Only mapped in the Island Park 7.5-minute quadrangle.

Qap_1, **Qap_2**, **Qap_3**, **Qap_4** Pediment-mantle deposits (Pleistocene) - Unconsolidated to poorly consolidated, poorly sorted sand, gravel, cobbles and boulders; up to four levels are recognized with the topographically highest level being the oldest; weak to strong soil profile developed in all four levels, and calcium carbonate (caliche) developed in upper 1 to 2 m of older deposits. The map unit Qap_3 in Browns Park and unit Qap_2 in the Island Park 7.5-minute quadrangle may represent more than one age of pediment-mantle deposit.

Tng Old gravel deposits (Pliocene to Miocene?) - Unconsolidated to moderately consolidated, poorly sorted boulders, cobbles, pebbles, gravel, and sand that caps high-level erosion surface in Goslin Mountain 7.5-minute quadrangle; clasts consist of chert, limestone, and quartzite; may be correlative with the Browns Park Formation; maximum thickness is about 50 m.

Tbp Browns Park Formation (Miocene) - Light-gray and light-brown, poorly to moderately consolidated, cross-bedded sandstone; some tuffaceous sandstone; subordinate conglomerate, siltstone, and crystal-poor, glassy, rhyolitic air-fall tuff; K-Ar ages of 25 to 10 Ma, but probably no older than 15 Ma; 0-500 m thick.

Tb Bishop Conglomerate (Oligocene) - Light-gray to pinkish-gray, poorly sorted, loosely cemented, pebble, cobble, and boulder conglomerate and friable sandstone mapped on the south flank of the Uinta Mountains; clasts are mostly red quartzite (Uinta Mountain Group) with some carbonate (Paleozoic); light-gray tuff interbeds with euhedral biotite and hornblende; 150 m thick.

Tw Wasatch Formation (Eocene) - Red, yellow, and gray friable sandstone, siltstone, claystone, and conglomerate; upper part intertongues with overlying Green River Formation in Green River Basin north of Dutch John quadrangle; conglomerate clasts consist of mostly gray limestone (Paleozoic), sandstone (Mesozoic), and some red quartzite (Uinta Mountain Group); 610 m thick.

Tfu Fort Union Formation (Paleocene) - Light-gray, light-brown, light-green, and brown sandstone, shale, and claystone with some carbonaceous shale, coal, siltstone, and conglomerate beds; inverse stratigraphy of Mesozoic through Paleozoic clasts in conglomerate beds with some clasts of Uinta Mountain Group locally present; only mapped on north flank of Uinta Mountains; 365-700 m thick.

TKfz Uinta fault zone rocks (Tertiary and Upper Cretaceous) - Broken rock derived mostly from the hanging wall that range from recognizable rock fragments to cataclasite and gouge; the fault zone varies from a few meters to about one kilometer in width.

Ke Ericson Sandstone (Upper Cretaceous) - Resistant, light-gray, medium- to coarse-grained sandstone and lenses of conglomerate, with local thin beds of dark-gray nonmarine shale; only mapped on north flank of Uinta Mountains; 88-275 m thick.

Krs Rock Springs Formation (Upper Cretaceous) - Resistant, light-gray to pale-grayish-orange, fine-grained, cross-bedded sandstone with some carbonaceous shale and coal beds; only mapped on north flank of Uinta Mountains; 80-333 m thick.

Kbl Blair Sandstone (Upper Cretaceous) - Resistant, light-gray, pale-grayish-orange to pink, thick-bedded sandstone with interbedded gray marine shale; shown as a tongue of the Baxter Shale near the Glades; only mapped on north flank of Uinta Mountains; 0-107 m thick.

Kbx Baxter Shale (Upper Cretaceous) - Gray, soft, slope-forming calcareous shale containing numerous beds of fine-grained, rippled-marked sandstone and minor limestone; only mapped on north flank of Uinta Mountains; 1,890 m thick.

Kms Mancos Shale (Upper Cretaceous) - Main body of the Mancos Shale; dark-gray, soft, slope-forming calcareous shale containing beds of siltstone and bentonitic clay; only mapped on south flank of Uinta Mountains; 1,500 m thick.

Kf Frontier Sandstone (Upper Cretaceous) - Upper part resistant, light-brown to light-gray and yellow, fine-grained and rippled-marked sandstone with local petrified wood and fossils; lower part soft, light- to dark-gray calcareous shale; may include minor limestone and coal beds in the lower part; 52-58 m thick.

Km Mowry Shale (Lower Cretaceous) - Dark-gray, siliceous shale that weathers silver gray; contains abundant fish scales; 61-67 m thick.

Kd Dakota Sandstone (Lower Cretaceous) - Upper and lower resistant, yellow and light-gray, medium- to coarse-grained sandstone beds separated by a carbonaceous shale; contains coal beds in exposures along south flank of Uinta Mountains; 40-76 m thick.

KJcm Cedar Mountain Formation and Morrison Formation - Cedar Mountain is mapped with the underlying Morrision Formation because it is generally thin and the contact with the underlying Morrison is difficult to determine; This unit is mapped along the north flank of the Uinta mountains; total thickness of map unit is 244-287 m.
Cedar Mountain Formation (Lower Cretaceous) - Purple, gray, and greenish-gray mudstone, siltstone, minor sandstone and limestone; contains calcrete beds that weather out as carbonate nodules; 0-60 m thick.
Morrison Formation (Upper Jurassic) - Upper Brushy Basin Member consists of soft, banded, variegated (light-gray, olive-gray, red, and light-purple) shale, claystone, siltstone, and minor cross-bedded sandstone, conglomerate, and bentonite; lower Salt Wash Member consists of resistant, light-gray to white cross-bedded sandstone; Salt Wash Member may not be preserved in the Flaming Gorge area; dinosaur remains are preserved in the Salt Wash Member at Dinosaur National Monument to the southeast; 184-227m thick .

Jm Morrison Formation - Same as Morrison described in map unit KJcm; the upper part of this map unit may also contain beds of the Cedar Mountain Formation; Jm is mapped along the south flank of the Uinta Mountains; 200-300m thick.

Jsc Stump Formation, Entrada Sandstone, and Carmel Formation
Stump Formation (Upper and Middle Jurassic) - Upper Redwater Member is greenish-gray and light-green slope-forming shale with glauconitic, fossiliferous (belemnites) sandstone and limestone. Lower Curtis Member is resistant, light-gray, cross-bedded, glauconitic, fossiliferous sandstone, and fissile shale. In places, however, the Curtis Member is not preserved because of a period of erosion prior to deposition of the overlying Redwater Member; Stump is 44-55 m thick.
Entrada Sandstone (Middle Jurassic) - Upper reddish-brown siltstone and fine-grained sandstone and a lower light-gray, pink, and light-brown sandstone; lower sandstone is resistant to erosion and forms cliffs and ridges; Entrada is 61-75 m thick.
Carmel Formation (Middle Jurassic) - Medium- to dark-red, green, and gray sandy shale, sandstone, siltstone, limestone and gypsum; upper part is mostly slope-forming red shale, siltstone, and sandstone underlain by a middle gypsiferous unit; lower part is mostly ledge-forming limestone, which is often oolitic and fossiliferous; Carmel is 53-101 m thick.

Jg Glen Canyon Sandstone (Lower Jurassic) - Pink, light-gray, and light-brown, resistant, large-scale cross-bedded sandstone; forms cliffs and ridges; top 2-10 m of the formations may include beds of the Middle Jurassic Page Sandstone. Glen Canyon beds are generally called the Nugget Sandstone along the north flank of the Uinta Mountains; 248-256 m thick.

Trcd Chinle, Moenkopi, and Dinwoody Formations undivided (Upper and Lower Triassic) - Chinle, Moenkopi, and Dinwoody Formations are combined as a single map unit on the north flank of the Uinta Mountains; On previous maps, Chinle beds have been called the Ankareh Formation and the Moenkopi beds have been called the Woodside Shale on the north flank of the Uinta Mountains.
Chinle Formation - See description below; 91-116 m
Moenkopi Formation - See description below; 221 m thick
Dinwoody Formation - Light-gray, greenish-gray, light-brown, and brown, thin-bedded ripple-marked shale, siltstone, and sandstone with minor amounts of limestone. Mostly a soft, slope-forming unit mapped along the north flank of the Uinta Mountains; 110-162 m thick.

Trc Chinle Formation (Upper Triassic) - Purplish-red, purple, light-gray, greenish-gray, light-green, rippled-marked siltstone, sandstone, claystone, shale, and conglomerate; generally forms slopes; base is resistant conglomerate unit named the Gartra Member; 50-90 m thick.

Trm Moenkopi Formation (Lower Triassic) - Medium- to dark-red, reddish-brown, green, and gray ripple-marked siltstone, fine-grained sandstone, and shale with gypsum and limestone beds; mostly soft, slope-forming unit; 220-240 m thick.

Ppc Park City and Phosphoria Formations (Lower Permian) -
Franson Member of Park City Formation - Gray, thick- to thin-bedded cherty limestone and dolomite interbedded with brownish-gray sandstone and red to ochre shale; generally resistant and form ledges and cliffs.
Meade Peak Phosphatic Shale Member of the Phosphoria Formation - Slope-forming dark-gray phosphatic shale with interbeds of sandstone and limestone.
Grandeur Member of Park City Formation - Light-gray to light-brownish-gray sandstone, dolomite, and limestone; generally resistant and form ledges and cliffs.
Combined thickness of Park City and Phosphoria Formations is 73-122 m.

PIPw Weber Sandstone (Lower Permian to Middle Pennsylvanian) - Light-gray to yellowish-gray, very thick bedded sandstone with interbeds of limestone in the lower part; highly cross-bedded sandstone in the upper part; forms steep cliffs and ridges; 472 m thick.

IPMu Pennsylvannian and Mississippian rocks undivided - Small fault blocks of carbonate rocks along the Uinta fault zone.

IPm Morgan Formation (Middle Pennsylvanian) - Light- to medium-red, yellow, and gray shale and siltstone, light- to medium-gray fossiliferous and red cherty limestone, and fine-grained, locally cross-bedded sandstone and red shale; 11-37 m thick.

IPrv Round Valley Limestone (Lower Pennsylvanian) -Light-gray to light-blue-gray, thin- to very thick bedded limestone interbedded with soft red shale; limestone is fossiliferous and cherty; chert is blue gray and yellowish gray, but red to pink jasperoid chert is common in the region; forms ledges and cliffs; 80-127 m thick.

Mdh Doughnut Shale and Humbug Formation
Doughnut Shale (Upper Mississippian) - Dark-gray shale with some red shale near base with beds of coarse sandstone, limestone and coal; shale is slope forming and clayey; 91 m thick.
Humbug Formation (Upper Mississippian) - Light-gray to red, fine-grained to very fine grained, soft to resistant sandstone interbedded with light-gray limestone and red to black shale; sandstone is locally cross-bedded and hematitic near the top of the formation; 75-90 m thick.

Mm Madison Limestone (Upper and Lower Mississippian) - Mostly dark-gray, medium to coarse crystalline, cherty limestone; chert is typically light gray; commonly contains solution cavities; 130-300 m thick.

Cl Lodore Formation (Upper Cambrian) - Light-brown to greenish-gray sandstone underlain by pink to tan to pale-greenish-gray glauconitic shale interbedded with tan to pale-green sandstone; base is variegated (pink, gray, and pale-green) coarse- to medium-grained cross-bedded sandstone; locally pebbly; upper part forms ledges, middle part forms slopes and ledges, and lower part forms cliffs; 180 m thick.

Yu Uinta Mountain Group (Upper and Middle Proterozoic) - Dark- to light-red, medium- to coarse-grained, massive to cross-bedded siliceous sandstone (metaquartzite); contains considerable red, green, and gray silty metashale and metaconglomerate; metaquartzite clasts are common in the metaconglomerate; as much as 7,315 m thick.

YXra, **XWrq**, **XWrm**, **XWre**, **XWrc** Red Creek Quartzite (Middle Proterozoic to Upper Archean) - Contains three main rock types: metaquartzite, mica schist, and amphibolite; other minor rock types include metadiorite and metacarbonate to marble. Map unit as much as 6,096 m thick.
Amphibolite (YXra) - Dark-gray to black, fine- to medium-grained amphibolite composed of strongly foliated to non-foliated metamorphosed mafic rocks, mostly hornblende, intruded into and intimately associated with the Red Creek Quartzite as numerous small bodies in the northeast part of the quadrangle.
Metaquartzite (XWrq) - Resistant white, gray, tan, and light-green metaquartzite.
Mica schist (XWrm) - Quartz-muscovite schist that grades between metaquartzite and mica schist and contains garnet and staurolite.
Metadiorite (XWre) - Metamorphosed diorite; epidiorite of previous mappers.
Carbonate rock (XWrc) - Metamorphosed carbonate rock along Goslin fault.

Wo Owiyukuts Complex (Late Archean) - High-grade, metamorphosed potassium-rich granitic gneiss and lesser quartzofeldspathic gneiss;Rb/Sr 2,700 Ma; unknown thickness.

Map Symbols

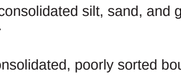
Contacts - dashed where approximately located:

FAULTS

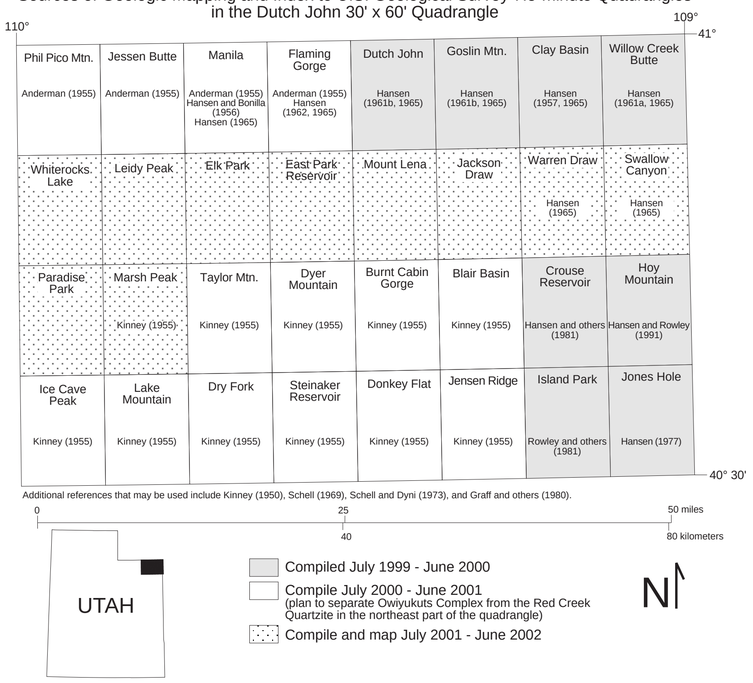
Steeply dipping - Dashed where approximately located; dotted where concealed; bar and ball on downthrown side where offset is known:

Thrust fault - teeth on hanging wall; dashed where approximately located and dotted where concealed:

STRIKE AND DIP OF BEDDING

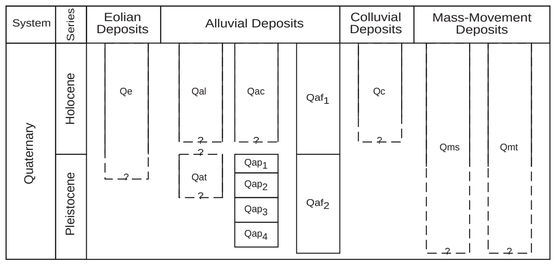


Sources of Geologic Mapping and Index to U.S. Geological Survey 7.5-minute Quadrangles in the Dutch John 30' x 60' Quadrangle



Additional references that may be used include Kinney (1950), Schell (1969), Schell and Dyni (1973), and Graff and others (1980).

Correlation of Quaternary Units



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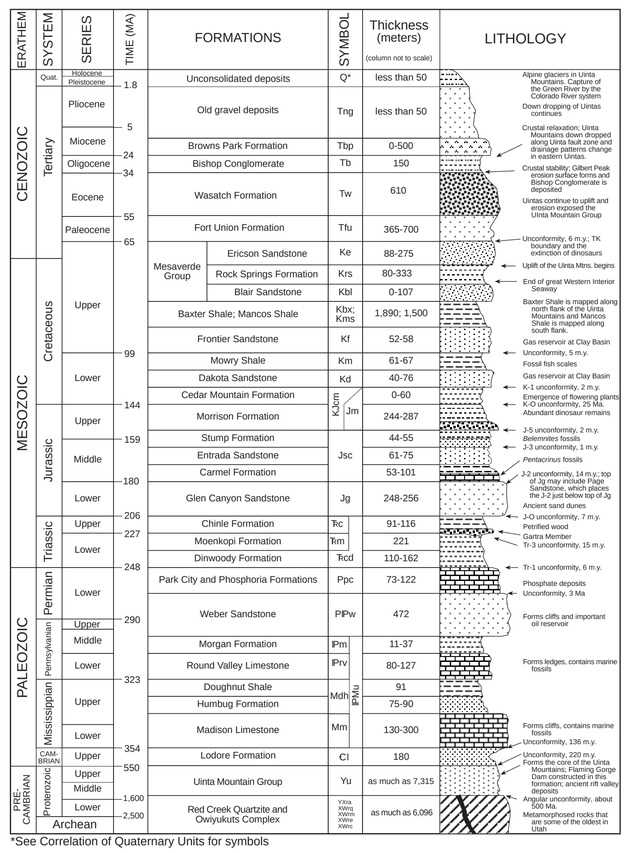
Stratigraphic Column



*See Correlation of Quaternary Units for symbols

Modified November 6,2000